CLAIMS

1. A screening assay for identifying compounds which have a physiological effect on an organism, the assay comprising the steps of:

a) reacting a test compound with a protein encoded by an essential gene comprising a sequence selected from the group consisting of SEQ ID Nos. 1-902, specific fragment thereof, or homologue thereof, from the organism; and

b) detecting any modulatory effect the compound has on the protein.

2. The screening assay according to claim 1 wherein the sequence is selected from the group consisting of SEQ ID Nos. 430-783 and 899-902.

3. The screening assay according to any preceding claim wherein the effect on the protein is a negative modulation.

4. The screening assay according to any preceding claim wherein the assay is a ligand binding assay for detecting the effect the compound has on the ligand binding of the protein

5. The screening assay according to any one of claims 1 to 4 wherein the assay is a functional activity assay for detecting the effect the compound has on the functional activity of the protein.

6. The screening assay according to claim 5 wherein the functional activity assay is selected from the group consisting of kinase assays; protein phosphatase assays; adenyl cyclase assays; guanylyl cyclase assays; phosphodiesterase assays; nucleosidease assays; protease assays; protein s cretion and/or import assays; nuclease assays; DNA metabolism assays; transcription factor assays; apoptosis assays; calcium utilisation assays; receptor/ion

channel assays; and G protein assays.

7. A compound having modulatory activity on a protein encoded by an essential gene, as identified by an assay according to any preceding claim.

8. A pesticidal formulation comprising a compound according to claim 7, together with a pesticidally acceptable excipient.

9. Use of a compound having modulatory activity on a protein encoded by an essential gene as identified by an assay according to any one of claims 1 to 6 or derivative or analogue thereof as a pesticide.

10. A pesticidally active compound identified by an assay according to any one of claims 1 to 6 and further tested for its ability to kill pests.

11. Use of a pesticidally active compound according to claim 10, in conjunction with other pesticides, herbicides and agriculturally usual auxiliaries as crop protection material.

12. A method of selectively modulating activity, in an organism, of a protein encoded by an essential gene comprising a sequence selected from the group consisting of SEQ ID Nos. 1-902 or a specific fragment thereof, or homologue thereof, comprising administering a compound that selectively modulates activity of the protein in the organism.

13. The method according to claim 12, wherein the selective modulation in activity of the protein has the r sult of substantially eliminating or severely reducing the activity of the protein, as compared to the activity of the protein without modulation.

14. The method according to claims 12 or 13, wherein the compound modulates the activity of the protein and has a minimal modulatory effect on other proteins of the organism.

15. The method according to any of claims 12 to 14, wherein the modulation in activity of the protein has the effect of being lethal or semi-lethal to the organism.

16. A method of modulating activity, in an organism, of a protein encoded by an essential gene comprising a sequence selected from the group consisting of SEQ ID Nos. 1-902 or a specific fragment thereof, or homologue thereof, comprising administering a compound, that selectively modulates activity of the protein, to an organism, and wherein the ability of the protein to modulate the activity of the protein is determined by:
- exposing the protein which has been produced by a genetically engineered cell expressing the protein, with the compound for a period of time;
- measuring the activity of the exposed protein using a ligand binding or functional activity assay; and
- comparing the activity of the exposed protein with an activity of a control protein which has not been exposed to the compound, so that compounds that modulate the protein activity are identified.

17. The method according to claim 16, for selectively modulating activity, in an organism, of a protein, further comprising the steps of:
- exposing a further cellular protein(s) of the organism to the compound for a period of time;
- measuring the activity of said further protein(s) using an assay(s) appropriate for such a purpose; and
- comparing the activity of said exposed further cellular protein(s) with an activity of a control protein(s) which has not been exposed to the compound, so that compounds

that substantially do not, or minimally modulate said further cellular protein(s) activity, are identified.

18. A method of identifying compounds having a potentially pesticidal activity caused by modulation of a protein encoded by an essential gene comprising a sequence selected from the group consisting of SEQ ID Nos. 1-902 or a specific fragment thereof, or homologue thereof, which comprises;

- obtaining the protein by heterologous expression of the essential gene in a host cell;
- employing the protein in an assay according to any one of claims 1 to 6 for detecting a compound which displays modulatory activity on the protein; and
- testing the compound which displays modulatory activity on the protein for its pesticidal activity on an organism.

19. A compound identified by the method according to claim 17 as having pesticidal activity.

20. Use of a compound according to claim 19 as a pesticide.

21. A pesticidal formulation comprising a compound according to claim 19 identified as having pesticidal activity, together with a pesticidally acceptable excipient

22. A method for the production of a pesticidal composition comprising identifying a compound that displays pesticidal activity using the method according to claim 18 and mixing the compound identified, or a derivative, or an analogue thereof, with a pesticidally acceptable carrier.

23. An isolated polynucleotide fragment comprising a sequence selected from the group consisting of SEQ ID Nos.430-783 and 899-902, a fragment thereof, or a homologue thereof.

24. An essential gene comprising a sequence selected from the group consisting of SEQ ID Nos.430-783 and 899-902, a fragment thereof, or a homologue thereof.

25. An isolated polynucleotide which hybridises under stringent conditions to a polynucleotide fragment selected from the group consisting of SEQ ID Nos. 430-783 and 899-902 or a fragment thereof.

26. Use of an isolated polynucleotide fragment comprising a sequence selected from the group consisting of SEQ ID Nos. 430-783 and 899-902, a fragment thereof, or a homologue thereof to identify and facilitate isolation of an essential gene.

27. Use of a polynucleotide fragment selected from the group consisting of SEQ ID Nos.430-783 and 899-902 or a fragment thereof, to identify and facilitate isolation of homologous sequences from other organisms.

28. Use of a polynucleotide fragment selected from the group consisting of SEQ ID Nos.430-783 and 899-902 or a fragment thereof, to identify and facilitate isolation of genes, from other organisms comprising homologous sequences.

29. An essential gene comprising a sequence selected from the group consisting of SEQ ID Nos.430-783 and 899-902, a fragment thereof, or a homologue thereof.

30. An expression vector comprising the essential gene according to claim 29.

31. An expression vector according to claim 30 comprising one or more control sequences capable of directing the replication and/or expression of an operatively linked essential gen .

32. A prokaryotic or eukaryotic host cell comprising the expression vector according to either of claims 30 or 31.

33. A method of producing a polypeptide comprising culturing a host cell according to claim 32 under conditions permitting expression of the polypeptide.

34. A polypeptide produced by the method of claim 33.

35. Use of the polypeptide according to claim 34 in an assay for detecting compounds which modulate activity of the protein.

36. Use of a polypeptide expressed by an essential gene comprising a sequence selected from the group consisting of SEQ ID Nos. 1-902, or a fragment, or a homologue thereof, in a pesticide screening assay for identifying a compound which modulates activity of the polypeptide.

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